NewsRelease

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Space Administration

Langley Research Center
Hampton, Virginia 23681-2199

Michael Braukus
Headquarters, Washington
(Phone: 202/358-1979)

Chris Rink
Langley Research Center, Hampton, Va.
(Phone: 757/864-6786)

Sue Hinz
Washington State University, Spokane
(Phone: 509/335-3583)

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NASA helps fetal hearts beat loud and clear

February is American Heart Month, and by keeping track of some very small American hearts with a new, portable fetal heart monitor, NASA technology is relieving some of the worry of high-risk pregnancies.

Researchers from NASA's Langley Research Center, Hampton, Va., worked with Baby Beats Inc., and Washington State University's Small Business Development Center -- both based in Spokane -- to transfer and develop aerospace technology originally created to better understand airflow over airplane wings into a portable, non-invasive, easy-to-use fetal heart monitor.

"Because the material we used for wing-surface measurements is flexible, it's ideally suited to fit over the curved surface of a maternal abdomen for fetal testing," said Allan Zuckerwar of Langley's Advanced Measurement and Diagnostics Branch.

Current fetal heart-monitoring devices generally work well but cost many thousands of dollars and most can only be used in a clinic or doctor's office. NASA developed the portable technology by responding to a request for assistance from Dr. Donald Baker, a physician whose practice includes remote areas where appropriate health care is difficult to obtain. For several reasons, when expectant mothers do not receive necessary prenatal care, the result is often increased fetal mortality.

In its present form, an at-home patient would place the saucer-shaped monitor on her belly and tune a computerized control device to hear the fetal heartbeat. She would then adjust for the strongest signal that can be transmitted directly to the doctor's office over her phone line.

Baby Beats Inc., Dr. Baker's newly formed company, plans to begin manufacturing and marketing the monitor in the next several months. Patients of Glendale Adventist Hospital in Los Angeles will use the monitor first.

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Baker's concern for tiny hearts began more than 25 years ago when the need for a portable heart rate monitor first occurred to him during obstetrics rounds in medical school. He watched as an unborn baby's heart rate, monitored by a fetal heart monitor strapped to the mother's belly, suddenly became dangerously irregular. A nurse hurried over and turned the pregnant woman on her side. The baby was inadvertently sitting on its own umbilical cord, choking itself, the nurse explained.

"I was just shocked, absolutely shocked," said Baker. "I knew we needed to create a way for mothers to take the monitor home with them."

Today, Baker envisions mothers with high-risk pregnancies and those who have trouble traveling to a doctor's office as the primary users of the monitor. His commitment to the need heightened after working as a family doctor in the Flathead Indian Reservation in Montana early in his career. Baker, a member of the Minnesota Chippewa, said pregnant mothers living in remote areas might be hours from a doctor's office and may not have the financial resources to get there. But inner city mothers who have difficulty making it to a clinic could use it too, he says. In fact, most women with high-risk pregnancies could benefit from the monitor.

"Whether they are rich or poor, mothers love their babies," the Spokane physician said. "They want to take care of their baby but, when they are hours away from health care, it's very hard. This helps dignify health care and puts control in the parents' hands."

Baker secured a license from NASA, which shares space-age technology with the business world, to develop an affordable, practical way to manufacture the monitor. And, Baker said, it is as easy to use as tuning a radio.

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